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## Checklist of the Hydraenidae (Coleoptera) of Turkey, with notes on distribution

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### Abstract

A checklist of the Hydraenidae recorded from Turkey is presented. The checklist includes data on the distribution and relevant references for 210 species/subspecies: two *Aulacochthebius* Leach, 113 *Hydraena* Kugelann, 21 *Limnebius* Leach, and 74 *Ochthebius* Leach. On the basis of their current distribution, the established 210 species/subspecies can be classified into 28 zoogeographical categories, grouped into six complexes. The largest number of species belongs to the group of Turkey endemics (49.05 %), which reflects the local character of the fauna.

**Key words:** Hydraenidae, aquatic Coleoptera, checklist, distribution, zoogeography, Turkey

### Introduction

Approximately 800 species/subspecies of Hydraenidae are known in the Palearctic Region (Jäch 2004). With a total of 210 species/subspecies, hydraenid diversity is exceptionally high in Turkey.

Hydraenidae of Turkey have been rather thoroughly studied in the last 25 years (Audisio *et al.* 1993, 1996; Darılmaz *et al.* 2011; Delgado & Jäch 2009; Ertorun & Tanatmış 2010; Jäch 1986, 1987, 1988a–c, 1989a–c, 1990, 1991, 1992a–e, 1993, 1994a, b, 1995, 1997a, b, 1999; Jäch & Delgado 2008; Jäch & Díaz 2001; Jäch & Kasapoğlu 2006; Jäch *et al.* 2003, 2006, 2011; Kasapoğlu 2002; Kasapoğlu & Erman 2002; Kasapoğlu *et al.* 2004, 2010; Topkara *et al.* 2011).

Below we present a checklist including information on provincial distribution (incl. maps) of the Hydraenidae from Turkey (Figs. 1–10). Numerous unpublished records are provided. These are based mainly on material deposited in the Vienna Natural History Museum, Austria.

Data on general distribution and zoogeographical classification of Hydraenidae are based largely on Jäch (2004) and Vigna Taglianti *et al.* (1999).

### Study area

Turkey can be divided into seven major regions according to climate, geographical location, flora and fauna, agricultural diversity, topography etc. The Black Sea Region, the Marmara Region, the Aegean Region, and the Mediterranean Region form the periphery. The interior is divided into Central, Eastern and South-eastern Anatolian Regions (Metz 1996).

#### 1. Black Sea Region (BS)

The Black Sea Region has a steep, rocky coast with rivers that cascade through the gorges of the coastal ranges. A few larger rivers, those cutting through the Pontus Mountains (Doğukaradeniz Mountains), have tributaries that flow in broad, elevated basins. Access inland from the coast is limited to a few narrow valleys because of mountain

ridges with elevations up to 1,800 meters in the west and to 4,000 meters in the east. They form an almost unbroken wall separating the coast from the interior. The higher, northwest facing slopes tend to be densely forested.

Provinces of the region: Amasya, Artvin, Bayburt, Çorum, Giresun, Gümüşhane, Ordu, Rize, Samsun, Sinop, Tokat, Trabzon, Bartın, Bolu, Düzce, Karabük, Kastamonu, Zonguldak.



FIGURE 1. Map of Turkish provinces.

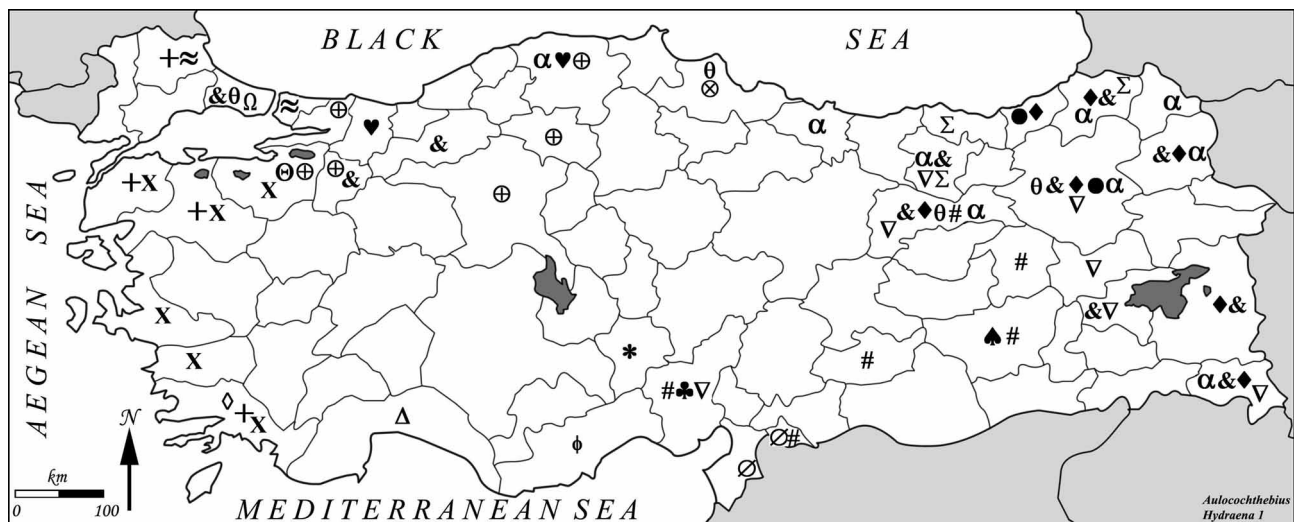


FIGURE 2. *Aulacochthebius* : ⊗: *A. exaratus*; ♥: *A. narentinus*; **Hydraena 1**: ♦: *H. abbasigili*; ♣: *H. akbesiana*; ♠: *H. amidensis*; &: *H. anatolica*; ⊕: *H. ancyrae*; ∅: *H. antiochena*; ●: *H. armeniaca*; θ: *H. assimilis*; Δ: *H. attaleiae*; φ: *H. aurita*; \*: *H. avuncula*; #: *H. beyarslani*; +: *H. bicolorata*; ⊖: *H. bodemeyeri*; Ω: *H. bulgarica*; α: *H. canakcioglui aydini*; ≈: *H. c.canakcioglui*; ∇: *H. cappadocica*; ◇: *H. carica*; X: *H. cata*; Σ: *H. caucasica*.

**2. Marmara Region (MA)**

The European portion of the Aegean Region consists mainly of rolling plateau country well-suited to agriculture. It receives about 520 millimeters of annual rainfall. The Bosphorus links the Sea of Marmara and the Black Sea. Both its Asian and European banks rise steeply and form a succession of cliffs, coves, and nearly landlocked bays.

Provinces of the region: Balıkesir, Bilecik, Bursa, Çanakkale, Edirne, İstanbul, Kırklareli, Kocaeli, Sakarya, Tekirdağ, Yalova.

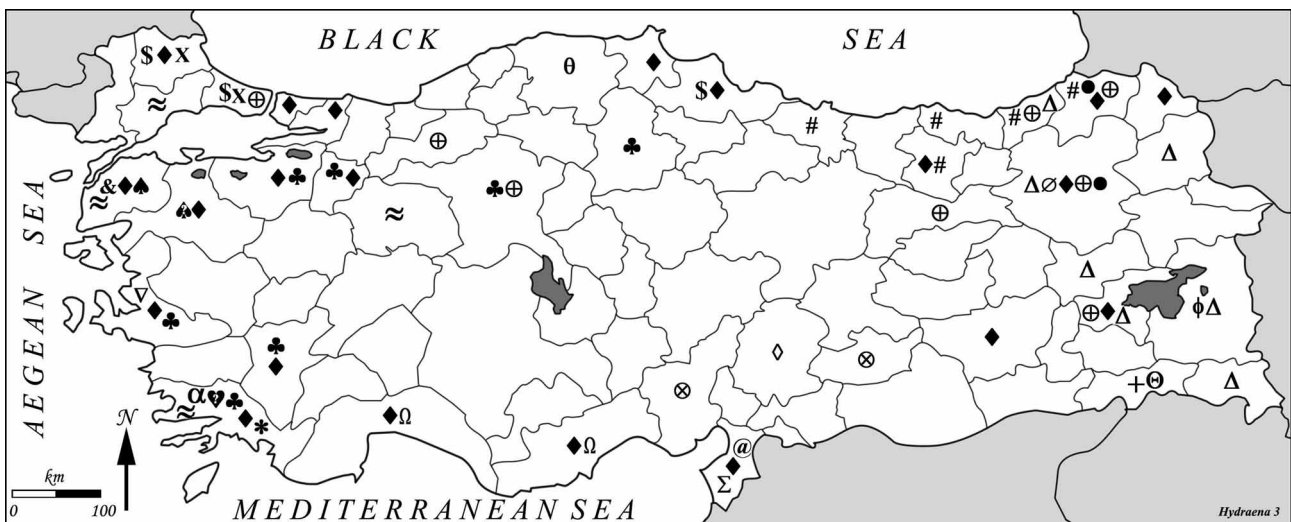
**3. Aegean Region (AE)**

On its Asian side, the Aegean Region has fertile soils and a typically Mediterranean climate with mild wet winters and hot dry summers.

Provinces of the region: Afyon, Aydın, Denizli, İzmir, Kütahya, Manisa, Muğla, Uşak.



**FIGURE 3. Hydraena 2:** ⊗: *H. cervisophila*; ♥: *H. ciliciensis*; ♦: *H. colchica*; ♣: *H. coryleti*; ♠: *H. crepidoptera*; &: *H. dentipalpis*; ⊕: *H. ebrimadli*; ∅: *H. eichleri*; ●: *H. emineae*; θ: *H. eucnemis*; Δ: *H. falcata*; ϕ: *H. finita*; \*: *H. fontiscarsavii*; #: *H. fritzi*; +: *H. galatica*; ⊖: *H. gnatella*; Ω: *H. gnatelloides*; α: *H. gracilis*; ≈: *H. graciloides*; ∇: *H. grandis*; ∠: *H. grata*; X: *H. gressa*; Σ: *H. griphus*.



**FIGURE 4. Hydraena 3:** ⊗: *H. guentheri*; +: *H. hainzi*; ♦: *H. helena*; ♣: *H. holdhausi*; ♠: *H. ilica*; &: *H. imbria*; ⊕: *H. integra*; ∅: *H. ispirensis*; ●: *H. janczyki*; θ: *H. kasyi*; Δ: *H. khnzoriani*; ϕ: *H. kurdistanica*; \*: *H. lapissectilis*; #: *H. lazica*; ♥: *H. levantina*; ⊖: *H. ligulipes*; Ω: *H. liriopae*; α: *H. lycia*; ≈: *H. macedonica*; ∇: *H. magnessa*; ∠: *H. mariannae*; X: *H. minutissima*; Σ: *H. modili*; @: *H. monscassius*; \$: *H. morio*.

#### 4. Mediterranean Region (ME)

The narrow coastal plains of the Mediterranean Region is separated from Anatolia by the Taurus Mountains (highest elevation: 2,750 meters). In general, summers are hot and dry.

Provinces of the region: Adana, Antalya, Burdur, Hatay, Isparta, Kahramanmaraş, Mersin, Osmaniye.

#### 5. Central Anatolian Region (CA)

Stretching inland from the Aegean coastal plain, the Anatolian Plateau occupies the area between the two zones of the folded mountains, extending east to the point where the two ranges converge. The plateau-like, semi-arid highlands of Anatolia are considered the heartland of the country. The region varies in elevation from 600 to 1,200 meters from west to east. The two largest basins on the plateau are the Konya Ovası and a basin occupied by the Tuz Gölü, a very large salt lake. Both basins are characterized by inland drainage.

The Anatolian Plateau receives very little rainfall. For instance, the semiarid center of the plateau has an average yearly precipitation of only 300 millimeters. In general, the plateau experiences extreme heat, with almost no rainfall in summer and cold weather with heavy snowfall in winter.

Provinces of the region: Aksaray, Ankara, Çankırı, Eskişehir, Karaman, Kayseri, Kırkkale, Kırşehir, Konya, Nevşehir, Niğde, Sivas, Yozgat.



**FIGURE 5. *Hydraena* 4:** ⊗: *H. muezziginea*; ♥: *H. mylasae*; ◆: *H. cf. nike*; ♣: *H. nilguenae*; ♠: *H. nivalis*; &: *H. olidipastoris*; ⊕: *H. pachyptera*; ⊘: *H. paganettii*; ●: *H. pamphylia* ⊘: *H. phallerata*; Δ: *H. phallica*; φ: *H. philyra*; \*: *H. plastica*; #: *H. platynemesis*; +: *H. platynaspis*; ⊘: *H. platysoma*; Ω: *H. pontica*; α: *H. prusensis*; ≈: *H. pseudoriparia*; ∇: *H. pygmaea*; ;: *H. richardimbi*; X: *H. riparia*; Σ: *H. rukiyeae*; @: *H. schilfii*; \$: *H. schillhammeri*.



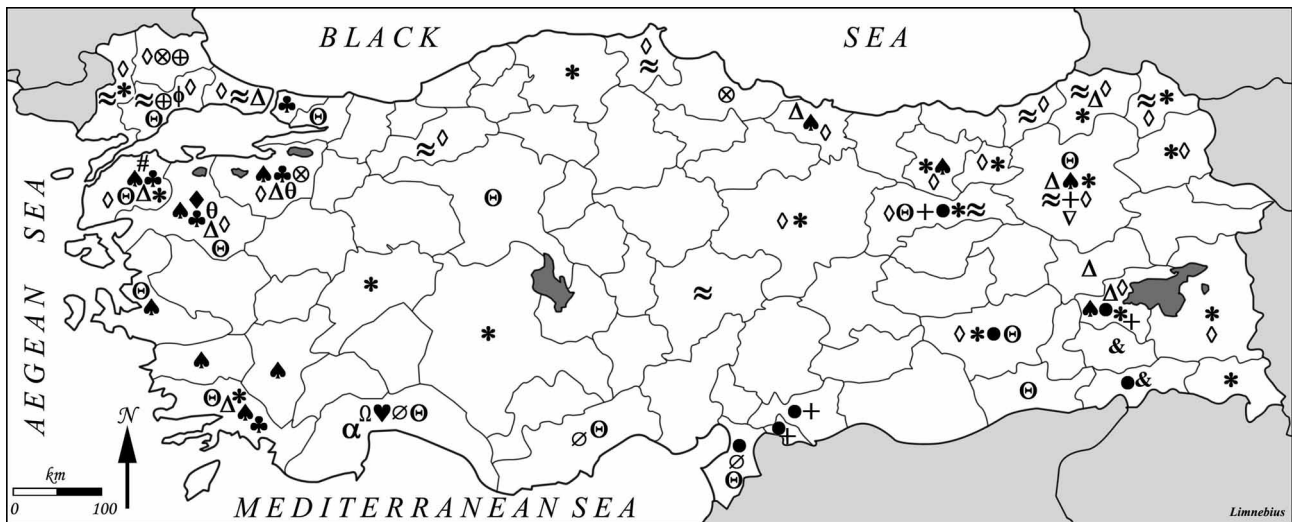
**FIGURE 6. *Hydraena* 5:** ⊗: *H. schmidi*; ♥: *H. schoedli*; ◆: *H. schoenmanni*; ♣: *H. schubertorum*; ♠: *H. scitula*; &: *H. septemlacuum*; ⊕: *H. serpentina*; ⊘: *H. sinope*; ●: *H. smyrnensis*; θ: *H. speciosa*; Δ: *H. subgrandis*; φ: *H. sublamina*; \*: *H. sublapsa*; #: *H. tauricola*; +: *H. tekmanensis*; ⊘: *H. terebrans*; Ω: *H. turcica*; α: *H. virginalis*; ≈: *H. wewalkai*.

## 6. Eastern Anatolian Region (EA)

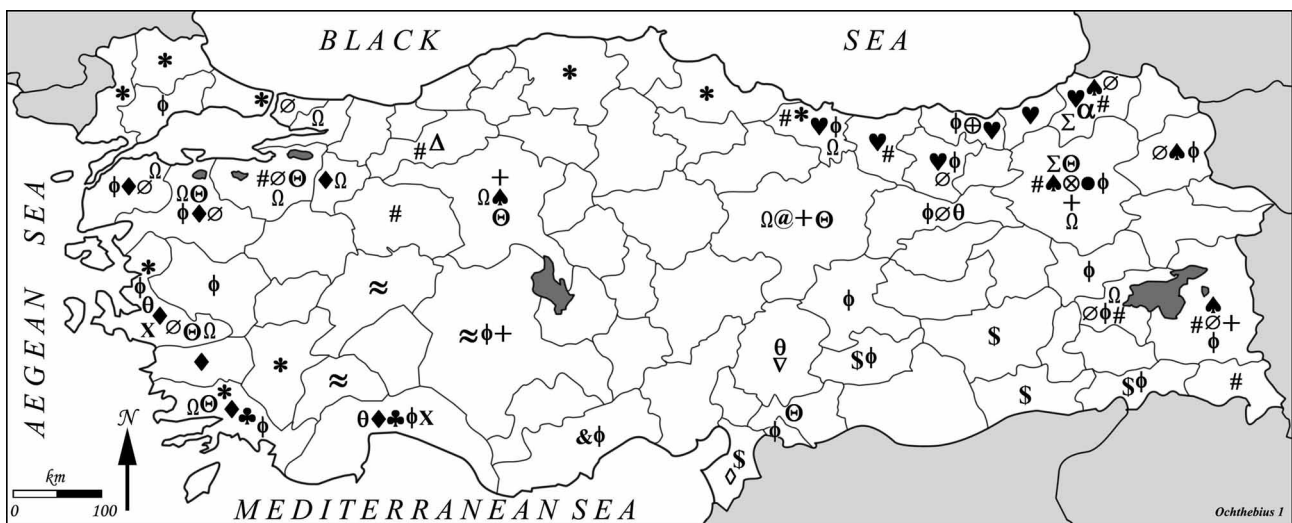
Eastern Anatolia, where the Pontus and Taurus mountain ranges converge, is a rugged country with higher elevations, a more severe climate, and greater precipitation than are found on the Anatolian Plateau. The region is known as the Anti-Taurus, and the average elevation of its peaks exceeds 3,000 meters. Mount Ararat, at 5,166 meters the highest point in Turkey, is located in the Anti-Taurus. Many of the Anti-Taurus peaks apparently are recently extinct volcanoes, judging from extensive lava flows. Turkey's largest lake, Lake Van, is situated in the mountains at an elevation of 1,546 meters. The headwaters of three major rivers arise in the Anti-Taurus: the east-flowing Aras, which empties into the Caspian Sea; the south-flowing Euphrates; and the south-flowing Tigris,

which eventually joins the Euphrates in Iraq before emptying into the Persian Gulf. Several small streams that empty into the Black Sea or landlocked Lake Van also originate in these mountains.

Provinces of the region: Ağrı, Ardahan, Bingöl, Bitlis, Elazığ, Erzincan, Erzurum, Hakkâri, Iğdır, Kars, Malatya, Muş, Tunceli, Van.



**FIGURE 7. *Limnebius*:** ⊗: *L. atomus*; ♥: *L. attalensis*; ♦: *L. claviger*; ♣: *L. corfidius*; ♠: *L. corybus*; &: *L. distinguendus*; ⊕: *L. fallaciosus*; ∅: *L. ferroi*; •: *L. levantinus*; θ: *L. murentinus*; Δ: *L. myrmidon*; φ: *L. nitigeus*; #: *L. paganettii*; \*: *L. papposus*; +: *L. paranuristanus*; ⊖: *L. perparvulus*; Ω: *L. reuvenortali*; ≈: *L. rubropiceus*; α: *L. spinosus*; ◊: *L. stagnalis*; ∇: *L. setifer*.

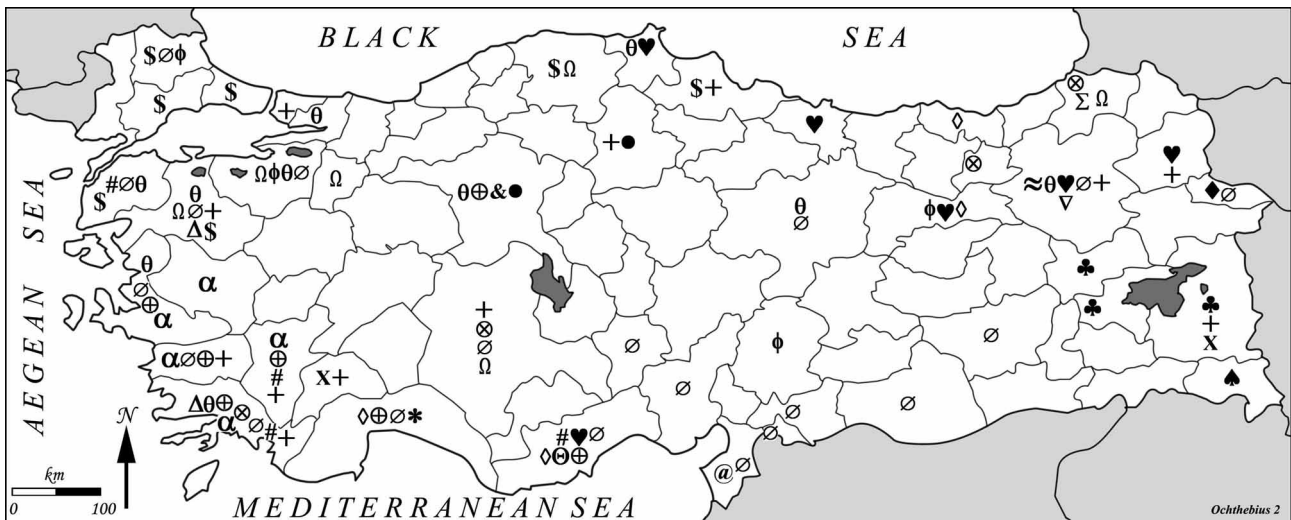


**FIGURE 8. *Ochthebius 1*:** ⊗: *O. akbuluti*; ♥: *O. anatolicus*; ♦: *O. bernhardi*; ♣: *O. brevicollis steinbuehleri*; ♠: *O. caucasicus*; &: *O. ciliciae*; ⊕: *O. colchicus*; ∅: *O. colveranus*; •: *O. costatellus*; θ: *O. decianus*; Δ: *O. delyi*; φ: *O. difficilis*; \*: *O. dilatatus*; #: *O. elburzi*; \$: *O. elisae*; +: *O. erzerumi*; @: *O. evanescens*; ⊖: *O. fausti*; Ω: *O. foveolatus*; α: *O. gibbosus*; ≈: *O. haeli*; ∇: *O. hanshebaueri*; ◊: *O. hatayensis*; X: *O. hellenicus*; Σ: *O. hofratvukovitsi*.

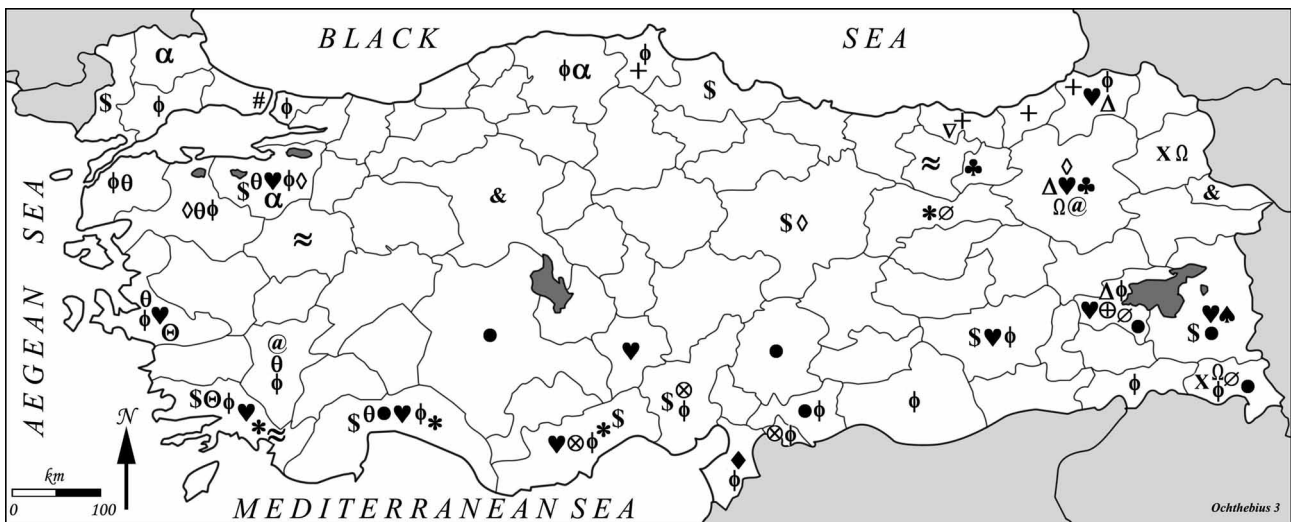
### 7. South-eastern Anatolian Region (SA)

South-eastern Anatolia lies south of the Anti-Taurus Mountains. It is a region of rolling hills and a broad plateau that extends into Syria. Elevations decrease gradually, from about 800 meters in the north to about 500 meters in the south. South-eastern Anatolia comprises the area known as the Arabian Platform.

Provinces of the region: Adıyaman, Batman, Diyarbakır, Gaziantep, Kilis, Mardin, Siirt, Şanlıurfa, Şırnak.



**FIGURE 9. *Ochthebius 2*:** ⊗: *O. huberti*; ♥: *O. inconspicuus*; ◆: *O. inelegans*; ♣: *O. kirschenhoferi*; ♠: *O. kurdistanicus*; &: *O. lacustatta*; ⊕: *O. lanuginosus*; ∅: *O. lividipennis*; ●: *O. madli*; θ: *O. magnannulatus*; Δ: *O. maxfischeri*; φ: *O. metallescens*; \*: *O. metallicus*; #: *O. metarius*; +: *O. meridionalis*; ⊖: *O. metellus*; Ω: *O. minimus*; α: *O. monychus*; ≈: *O. nonaginta*; ∇: *O. oezkani*; ◇: *O. parvannulatus*; X: *O. peisonis*; Σ: *O. pliginskiyi*; @: *O. punctatoides*; \$: *O. pusillus*.



**FIGURE 10. *Ochthebius 3*:** ⊗: *O. quadrifoveolatus*; ♥: *O. ragusae*; ◆: *O. rectilobus*; ♣: *O. remotus*; ♠: *O. rivibelli*; &: *O. schneideri*; ⊕: *O. schuberti*; ∅: *O. scitulus*; ●: *O. serpentinus*; θ: *O. smyrnensis*; Δ: *O. speculator*; φ: *O. striatus*; \*: *O. stygialis*; #: *O. subinteger*; +: *O. subopacus*; ⊖: *O. subpictus deletus*; Ω: *O. sulphuris*; α: *O. thraciae*; ∇: *O. trapezuntinus*; ≈: *O. turcicus*; ◇: *O. uskubensis*; @: *O. ustaogluui*; X: *O. virens*; \$: *O. viridis*.

### Check List of the Turkish Species of the Family Hydraenidae

The hydraenid fauna of Turkey includes 210 species/subspecies belonging to four genera: two species of *Aulacochthebius* (Figure 2), 114 species/subspecies of *Hydraena* (Figures 2–6), 21 species of *Limnebius* (Figures 7) and 73 species/subspecies of *Ochthebius* (Figures 8–10). One hundred and three taxa are endemic to Turkey. In the lists below, these are marked with an asterisk (\*).

The provincial data presented below are based on literature records and on recent collections stored mainly in the Vienna Natural History Museum. It should be kept in mind that some new provinces have been founded in Turkey in recent years. Therefore, it was necessary to amend certain provincial records from the literature. For instance, in *Limnebius rubropiceus* Kuwert, the record for Kars had to be changed to Ardahan, which did not exist when this record was published for the first time (see Jäch 1993).

In the checklist below a chorotype is assigned to each species. For abbreviations, see Table 1.

TABLE 1. Zoogeographical composition of Hydraenidae in Turkey.

Zoogeographical Categories			Species/Subspecies	
Complexes	Chorotypes	Code	Number	%
1. Species wide-spread in the Palearctic Region (P)	Sibero-European	SIE	4	1.90
	Turano-European	TUE	2	0.95
	Turano-Europeo-Mediterranean	TEM	1	0.48
	Total		7	3.33
2. Species more or less wide-spread in Europe (E)	European	EUR	2	0.95
	S-European	SEU	10	4.76
	Total		12	5.71
3. Species more or less wide-spread in the Mediterranean (M)	Mediterranean	MED	4	1.90
	E-Mediterranean	EME	4	1.90
	Europeo-Mediterranean	EUM	2	0.95
	Mediterraneo-Sindian	MES	1	0.48
	Total		11	5.24
4. Species more or less wide-spread in the Palearctic Region but occurring mainly or exclusively in its western half (WP)	Siberian	SIB	2	0.95
	Turano-Anatolian	TUAN	4	1.90
	Balkano-Anatolian	BALAN	37	17.62
	Total		43	20.47
5. Species wide-spread in the Middle East (SWA)	SW-Asian	SWA	1	0.49
	Irano-Anatolian	IRAN	11	5.24
	Anatolo-Caucasian	ANCA	4	1.90
	Syro-Anatolian	SYAN	4	1.90
	Total		20	9.53
6. Species endemic to the Middle East (ME)	S-Anatolian endemics	ANAS	28	13.33
	Anatolian endemics	ANAT	20	9.52
	E-Anatolian endemics	ANAE	16	7.62
	NW-Anatolian endemics	ANNW	12	5.71
	NE-Anatolian endemics	ANNE	8	3.81
	N-Anatolian endemics	ANAN	5	2.38
	W-Anatolian endemics	ANAW	5	2.38
	SW-Anatolian endemics	ANSW	5	2.38
	Central Anatolian endemics	ANAC	4	1.90
	Turkey endemics		103	49.05
	Armeno-E-Anatolian endemics	ARAN	7	3.33
	Ponto-Caucasian endemics	POCA	5	2.38
	Kolkhido-Armenian endemics	KOAR	2	0.95
Other endemics		14	6.66	

*Ochthebius minabensis* Ferro, which was recorded from Turkey by Kasapoğlu *et al.* (2004) is in fact an undescribed species, closely related with *O. minabensis* and therefore excluded here.

***Aulacochthebius* Leach**



**1. *A. exaratus* Mulsant**Samsun (Aguilera *et al.* 1998).

Chorotype: MED

***Hydraena Kugelann*****1. *H. abbasigili* Jäch**Hakkari, Van (Jäch 1988a), Artvin, Erzurum, Rize (Kasapoğlu 2002), Erzincan (Darılmaz *et al.* 2011).

Unpublished: Kars.

Chorotype: ARAN

**2. *H. akbesiana* (Audisio, De Biase & Jäch) \***Adana (Audisio *et al.* 1993).

Chorotype: ANAS

**3. *H. amidensis* Jäch \***

Diyarbakır (Jäch 1988a).

Chorotype: ANAE

**4. *H. anatolica* Janssens**

Bolu (Janssens 1963a), Bitlis, Erzincan, Erzurum, Gümüşhane, Hakkari, İstanbul, Kars (Jäch, 1995), Artvin (Kasapoğlu 2002), Bilecik (Ertorun &amp; Tanatmış 2010).

Unpublished: Van.

Chorotype: ANCA

**5. *H. ancyræ* Jäch \***

Ankara, Çankırı, Kastamonu, Kocaeli (Jäch 1992e), Bilecik, Bursa (Ertorun &amp; Tanatmış 2010).

The record from Kocaeli ("İzmit") by Jäch (1992e) was due to a printing error, but this species was meanwhile collected also from this province (leg. Ertorun).

Chorotype: ANAT

**6. *H. antiochena* Jäch**

Hatay, Kilis (Jäch 1988a).

Chorotype: SYAN

**7. *H. armeniaca* Janssens**

Erzurum, Rize (Jäch &amp; Skale 2011).

This species was erroneously recorded from Ankara by Jäch (1992e).

Chorotype: ARAN

**8. *H. assimilis* Rey**İstanbul (Jäch 1988b), Erzurum (Kasapoğlu 2002), Erzincan (Darılmaz *et al.* 2011).

Unpublished: Samsun.

Chorotype: SEU

**9. *H. attaleiae* Ferro \***

Antalya (Ferro 1984a).

Chorotype: ANAS

**10. *H. aurita* Jäch \***

Mersin (Jäch 1988c).

Chorotype: ANAS

**2. *A. narentinus* Reitter**

Unpublished: Kastamonu, Sakarya.

Recorded from Turkey by Jäch (2004).

Chorotype: EME

**11. *H. avuncula* Jäch \***

Niğde (Jäch 1988c).

Chorotype: ANAC

**12. *H. beyarslani* Jäch \***

Bingöl, Diyarbakır, Kilis (Jäch 1988a).

Unpublished: Adana, Adıyaman, Erzincan.

Chorotype: ANAT

**13. *H. bicolorata* Jäch**

Balıkesir, Çanakkale, Kırklareli, Muğla (Jäch 1997a).

Chorotype: BALAN

**14. *H. bodemeyeri* Jäch & Díaz \***

Bursa (Jäch &amp; Díaz 2001).

Records from Bilecik and Kocaeli by (Ertorun &amp; Tanatmış 2010) are based on misidentifications.

Chorotype: ANNW

**15. *H. bulgarica* Breit**

İstanbul (Janssens 1965).

Chorotype: BALAN

**16. *H. canakcioglu aydini* Janssens**

Artvin, Erzincan, Erzurum, Gümüşhane, Hakkari, Kars, Kastamonu, Ordu (Jäch 1997a).

Unpublished: Ardahan, Rize.

Chorotype: POCA

**17. *H. c. canakcioglu* Janssens**

İstanbul, Kırklareli (Jäch 1997a).

Chorotype: BALAN

**18. *H. cappadocica* Jäch**

Adana, Bitlis, Hakkari (Jäch 1988a, c).

Erzincan, Erzurum, Gümüşhane, Muş (Ferro &amp; Jäch 2000).

Chorotype: ARAN

**19. *H. carica* Jäch \***

Muğla (Jäch 1988c, Jäch &amp; Díaz 2001: 370).

The record from Antalya by Jäch (1992e) refers to *H. pamphyliæ* (see Jäch & Díaz 2001).

Chorotype: ANSW

**20. *H. cata* Orchymont**Balıkesir (Orchymont 1943a, Janssens 1965), Aydın, İzmir (Audisio *et al.* 1996).

Unpublished: Bursa, Çanakkale, Muğla.

Chorotype: BALAN

**21. *H. caucasica* Kuwert**

Artvin, Gümüşhane, Trabzon (Jäch 1992e).  
Chorotype: POCA

**22. *H. cervisophila* Jäch \***

Artvin (Jäch 1992e).  
Chorotype: ANNE

**23. *H. ciliciensis* Jäch \***

Mersin (Jäch 1988c).  
Chorotype: ANAS

**24. *H. colchica* Janssens**

Trabzon (Janssens 1963b), Artvin, Gümüşhane (Jäch 1988c),  
Erzurum (Kasapoğlu, 2002).  
Chorotype: ARAN

**25. *H. coryleti* Jäch \***

Amasya, Çankırı, Gümüşhane, Kastamonu, Ordu, Samsun,  
Sinop, Sivas (Jäch 1992e).  
Chorotype: ANAT

**26. *H. crepidoptera* Jäch \***

Kastamonu, Sinop (Jäch 1992e, 1995).  
Chorotype: ANAN

**27. *H. dentipalpis* Reitter**

Trabzon (Jäch 1987), Artvin, Erzurum, Rize (Kasapoğlu  
2002).  
Unpublished: Giresun, Ordu.  
Chorotype: POCA

**28. *H. ebrimadli* Jäch \***

Şırnak (Jäch 1988a).  
Chorotype: ANAE

**29. *H. eichleri* Orchymont**

Van (Jäch, 1988a 1992e).  
Chorotype: ANCA

**30. *H. emineae* Jäch & Kasapoğlu \***

Antalya (Jäch & Kasapoğlu 2006).  
Chorotype: ANAS

**31. *H. eucnemis* Janssens \***

Bitlis, Mersin, Niğde (Jäch 1988a, c), Artvin, Erzurum (Kasa-  
poğlu 2002).  
Unpublished: Erzincan.  
Chorotype: ANAT

**32. *H. falcata* Jäch \***

Kastamonu, Sinop (Jäch 1992e), Bilecik, Bursa (Ertorun &  
Tanatmış 2010).  
Chorotype: ANAT

**33. *H. finita* Orchymont**

İzmir (Orchymont 1943b; Jäch 1992e).  
Chorotype: BALAN

**34. *H. fontiscarsavii* Jäch**

Bitlis, Hakkari (Jäch 1988a), Erzurum (Kasapoğlu 2002).  
Unpublished: Antalya, Konya, Van.  
Chorotype: IRAN

**35. *H. fritzi* Jäch \***

Gümüşhane, Kahramanmaraş (Jäch 1992e).  
Chorotype: ANAT

**36. *H. galatica* Janssens**

Ankara (Janssens 1971), Afyon, Niğde (Jäch 1988c), Erzincan  
(Jäch 2000), Artvin, Erzurum (Kasapoğlu 2002).  
Unpublished: Gümüşhane, Kars, Sivas, Van.  
Chorotype: ARAN

**37. *H. gnatella* Orchymont \***

Aydın, İzmir (Orchymont 1945a), Muğla (Jäch 1988c).  
Chorotype: ANAW

**38. *H. gnatelloides* Orchymont \***

Antalya (Orchymont 1945a).  
Chorotype: ANAS

**39. *H. gracilis* Germar**

Kırklareli (Jäch 1995).  
Chorotype: BALAN

**40. *H. graciloides* Jäch \***

Bolu (Jäch 1988a, 1995).  
Chorotype: ANNW

**41. *H. grandis* Reitter**

Afyon, Ankara, Antalya, Balıkesir, Bilecik, Bursa, Çorum,  
Denizli, İzmir, Konya, Manisa, Niğde (Orchymont  
1944a), Hatay, İstanbul, Şırnak (Jäch 1988a), Amasya,  
Sivas (Jäch 1992e: 95), Artvin, Erzurum (Kasapoğlu  
2002), Çanakkale (Ertorun & Tanatmış 2010).  
Unpublished: Eskişehir, Kastamonu, Kayseri, Kırklareli,  
Muğla, Ordu, Tekirdağ, Van.  
Chorotype: BALAN

**42. *H. grata* Orchymont**

Balıkesir, İstanbul, İzmir, Manisa (Orchymont 1944a),  
Bilecik, Bursa (Ertorun & Tanatmış 2010).  
Unpublished: Çanakkale, Kırklareli, Kocaeli.  
The record from Çanakkale by (Ertorun & Tanatmış 2010) is  
based on misidentification and in fact refers to *H. gran-*  
*dis*.  
Chorotype: BALAN

**43. *H. gressa* Orchymont \***

Antalya (Orchymont 1944a), Van (Jäch 1988a).  
Unpublished: Erzincan, Erzurum.  
Chorotype: ANAT

**44. *H. griphus* Orchymont \***

Antalya (Orchymont 1944a).  
Chorotype: ANAS

**45. *H. guentheri* Jäch \***

Adıyaman (Jäch 1992e).  
Unpublished: Adana.  
Chorotype: ANAS

**46. *H. hainzi* Jäch \***

Şırnak (Jäch 1988a).  
Chorotype: ANAS

**47. *H. helena* Orchymont**

Bitlis, Diyarbakır, Hatay (Jäch 1988a), Antalya, Çanakkale, Mersin (Jäch 1988c), Artvin, Erzurum (Kasapoğlu 2002).  
Unpublished: Ardahan, Balıkesir, Bilecik, Bursa, Denizli, Gümüşhane, İstanbul, İzmir, Kırklareli, Kocaeli, Muğla, Samsun, Sinop.  
Chorotype: BALAN

**48. *H. holdhausi* Pretner**

Ankara Çorum (Jäch 1988c: 247), Bursa (Jäch & Díaz 2001: 366), Bilecik (Ertorun & Tanatmış 2010: under the name *H. bodemeyeri*).  
Unpublished: Denizli, İzmir, Muğla.  
Chorotype: BALAN

**49. *H. ilica* Jäch \***

Çanakkale (Jäch 1994b).  
The paratype labelled "TR Balıkesir Yenice", which was collected by H. Hebauer in 1988, cannot be attributed to Balıkesir Province with certainty.  
Chorotype: ANNW

**50. *H. imbria* Jäch & Díaz \***

Çanakkale (Jäch & Díaz 2001).  
Chorotype: ANNW

**51. *H. integra* Pretner**

Bitlis, Bolu, İstanbul (Jäch 1988a), Ankara, Artvin, Erzincan, Erzurum (Jäch 1992e).  
Unpublished: Rize.  
Chorotype: ANCA

**52. *H. ispirensis* Kasapoğlu, Jäch & Skale \***

Erzurum (Kasapoğlu *et al.* 2010).  
Chorotype: ANAE

**53. *H. janczyki* Jäch \***

Artvin (Jäch, 1992e), Erzurum (Kasapoğlu 2002).  
Chorotype: ANNE

**54. *H. kasyi* Jäch \***

Kastamonu (Jäch 1992e).  
Chorotype: ANAN

**55. *H. khnzoriani* Janssens**

Bitlis, Erzurum, Hakkari, Kars, Muş, Van (Jäch 1988a, 1992e; Jäch & Díaz 2001).  
Unpublished: Rize.  
Chorotype: IRAN

**56. *H. kurdistanica* Jäch \***

Van (Jäch 1988a).  
Chorotype: ANAE

**57. *H. lapisectilis* Jäch \***

Muğla (Jäch 1992e).  
Records from Balıkesir, Bursa and Çanakkale by (Ertorun & Tanatmış 2010) are based on misidentifications.  
Chorotype: ANSW

**58. *H. lazica* Janssens \***

Trabzon (Janssens 1963b), Gümüşhane, Rize (Kasapoğlu 2002).  
Unpublished: Artvin, Ordu.  
Chorotype: ANNE

**59. *H. levantina* Sahlberg**

İzmir (Jäch 1986, 1992e) – status of Turkish material uncertain.  
Chorotype: BALAN

**60. *H. ligulipes* Jäch \***

Şırnak (Jäch 1988a).  
Chorotype: ANAE

**61. *H. liriopae* Orchymont \***

Antalya (Orchymont 1943b; Jäch 1988c).  
Unpublished: Mersin.  
Chorotype: ANAS

**62. *H. lycia* Jäch \***

Muğla (Jäch 1988c).  
Chorotype: ANSW

**63. *H. macedonica* Orchymont**

Çanakkale (Jäch 1988c).  
Unpublished: Eskişehir, Muğla, Tekirdağ.  
Chorotype: BALAN

**64. *H. magnessa* Jäch \***

İzmir (Jäch 1997b).  
Chorotype: ANAW

**65. *H. mariannae* Jäch \***

Kahramanmaraş (Jäch 1992e).  
Chorotype: ANAS

**66. *H. minutissima* Stephens**

Unpublished: İstanbul, Kırklareli.  
Recorded from Turkey by Jäch (2004).  
Chorotype: SEU

**67. *H. modili* Jäch**

Hatay (Jäch 1988a; Jäch *et al.* 2006).  
Chorotype: SYAN

**68. *H. monscassius* Jäch \***

Hatay (Jäch 1988a).  
Chorotype: ANAS

**69. *H. morio* Kiesenwetter**

İstanbul (Jäch 1988a).  
Unpublished: Kırklareli, Samsun.  
Chorotype: BALAN

**70. *H. muezziginea* Jäch \***

Bitlis (Jäch 1988a), Erzurum (Kasapoğlu 2002).  
Unpublished: Erzincan, Gümüşhane, Sivas.  
Chorotype: ANAT

**71. *H. mylasae* Jäch \***

Aydın (Jäch 1992e: 87), İzmir, Muğla (Jäch 1992e: 100).  
Chorotype: ANAW

**72. *H. cf. nike* Jäch**

Artvin, Gümüşhane, Ordu (Jäch 1995).  
Chorotype: BALAN

**73. *H. nilguenae* Jäch \***

Diyarbakır (Jäch 1988a).  
Chorotype: ANAE

**74. *H. nivalis* Jäch \***

Antalya (Jäch 1992e).  
Chorotype: ANAS

**75. *H. olidipastoris* Jäch \***

Bitlis, Van (Jäch 1988a).  
Unpublished: Artvin, Erzincan, Erzurum, Rize.  
Chorotype: ANAT

**76. *H. pachyptera* Apfelbeck**

Unpublished: Kırklareli.  
Recorded from Turkey by Jäch (2004).  
Chorotype: BALAN

**77. *H. paganettii* Ganglbauer**

Afyon, İstanbul, Mersin (Jäch 1988c), Erzurum (Kasapoğlu 2002), Bursa, Kocaeli (Ertorun & Tanatmış 2010), Erzincan (Darılmaz *et al.* 2011).  
Unpublished: Çanakkale, Kastamonu, Ordu.  
The record from Balıkesir by (Ertorun & Tanatmış 2010) is based on misidentification.  
Chorotype: EME

**78. *H. pamphylia* Jäch & Díaz \***

Antalya (Jäch & Díaz 2001).  
Chorotype: ANAS

**79. *H. phallerata* Orchymont \***

İstanbul (Orchymont 1944b; Jäch 1988a, 1992e).  
Chorotype: ANNW

**80. *H. phallica* Orchymont**

Unpublished: Kırklareli.  
Recorded from Turkey by Jäch (2004).  
Chorotype: BALAN

**81. *H. philyra* Orchymont\***

Balıkesir (Orchymont 1944b), Çanakkale (Jäch 1992e).  
Chorotype: ANNW

**82. *H. plastica* Orchymont \***

Bursa (Orchymont 1943a; Jäch 1992e).  
Chorotype: ANNW

**83. *H. platycnemis* Jäch \***

Hatay (Jäch 1988a), Gaziantep (Jäch 1992e: 97).  
Chorotype: ANAS

**84. *H. platynaspis* Jäch \***

Mersin, Niğde (Jäch 1988c).  
Chorotype: ANAS

**85. *H. platysoma* Janssens \***

Artvin (Janssens 1968), Erzurum (Kasapoğlu 2002).  
Unpublished: Ordu.  
Chorotype: ANNE

**86. *H. pontica* Janssens**

Amasya, Artvin, Erzurum, Kars, Ordu, Rize, Trabzon (Jäch 1992e: 94).  
Unpublished: Gümüşhane.  
Chorotype: POCA

**87. *H. prusensis* Jäch \***

Bursa (Jäch 1992e).  
Chorotype: ANNW

**88. *H. pseudoriparia* Orchymont \***

Bursa (Orchymont 1945a; Jäch 1992e), Çanakkale (Jäch 1994b).  
Chorotype: ANNW

**89. *H. pygmaea* Waterhouse**

“Çurucın, en Lycie”, Denizli (Janssens 1965), Artvin (Janssens 1968).  
The record published from Afyon by Kasapoğlu (2002) was due to a mistake (A. Kasapoğlu, personal communication).  
Unpublished: Erzincan, Erzurum, Kırklareli, Ordu.  
Chorotype: SEU

**90. *H. richardimbi* Jäch \***

Ardahan (Jäch 1992e).  
Chorotype: ANNE

**91. *H. riparia* Kugelann**

İstanbul (Jäch 1988a), Kocaeli (Jäch 1988b).  
Unpublished: Kırklareli, Tekirdağ.  
Chorotype: SIE

**92. *H. rukiyaee* Kasapoğlu, Jäch & Skale \***

Çorum (Kasapoğlu *et al.* 2010).  
Chorotype: ANAC

**93. *H. schilfii* Jäch \***

Bitlis, Hakkari (Jäch 1988a).  
Chorotype: ANAE

**94. *H. schillhammeri* Jäch \***

Bolu (Jäch 1988a).  
Unpublished: Kastamonu.  
Chorotype: ANNW

**95. *H. schmidi* Jäch & Díaz \***

Antalya (Jäch & Díaz 2001).  
Chorotype: ANAS

**96. *H. schoedli* Jäch \***

Konya (Jäch 1992e).  
Chorotype: ANAC

**97. *H. schoenmanni* Jäch \***

Bitlis (Jäch 1988a), Erzurum (Kasapoğlu 2002), Erzincan (Darılmaz *et al.* 2011)  
Unpublished: Antalya, Gümüşhane, Kahramanmaraş, Muğla, Van.  
Chorotype: ANAT

**98. *H. schubertorum* Jäch & Díaz \***

Sinop (Jäch & Díaz 2001).  
Chorotype: ANAN

**99. *H. scitula* Orchymont \***

İstanbul (Orchymont 1943a; Jäch 1988a).  
Chorotype: ANNW

**100. *H. septemlacuum* Jäch \***

Bolu, Kastamonu, Ordu, Sinop (Jäch 1992e).  
Chorotype: ANAN

**101. *H. serpentina* Jäch \***

Kilis (Jäch 1988a).  
Unpublished: Adana.  
Chorotype: ANAS

**102. *H. sinope* Jäch \***

Kastamonu, Ordu, Sinop (Jäch 1992e).  
Chorotype: ANAN

**103. *H. smyrnensis* Sahlberg**

Çanakkale, İzmir (Jäch 1992e).  
Chorotype: BALAN

**104. *H. speciosa* Orchymont**

Aydın, Balıkesir, İstanbul, İzmir (Orchymont 1944c; Jäch 1988a), Bursa, Kocaeli (Ertorun & Tanatmış 2010: under the names *H. bodemeyeri* and *H. lapissectilis*).  
The record of *H. subdeficiens* from İzmir by Sahlberg (1913) probably refers to this species.  
Unpublished: Antalya, Çanakkale, Denizli, Muğla (leg. Ertorun), Tekirdağ.  
Chorotype: BALAN

**105. *H. subgrandis* Jäch \***

Bingöl, Bitlis, Diyarbakır, Hatay, Kilis, Mersin, Niğde, Şanlıurfa (Jäch 1988a, c), Erzincan (Darılmaz *et al.* 2011).

Unpublished: Adıyaman, Kahramanmaraş.  
Chorotype: ANAT

**106. *H. sublamina* Orchymont \***

Antalya (Orchymont 1945a; Jäch 1988c).  
Unpublished: Mersin, Muğla.  
Chorotype: ANAS

**107. *H. sublapsa* Orchymont \***

Antalya (Orchymont 1945a), Muğla (Jäch 1988c).  
Chorotype: ANSW

**108. *H. tauricola* Jäch**

Bingöl, Diyarbakır, Gaziantep, Hakkari, Mersin, Şırnak (Jäch 1988a, c).  
Chorotype: IRAN

**109. *H. tekmanensis* Jäch, Skale & Kasapoğlu \***

Erzurum, Erzincan (Jäch *et al.* 2011).  
Chorotype: ANAE

**110. *H. terebrans* Jäch \***

Erzincan (Jäch 1992e).  
Chorotype: ANAE

**111. *H. turcica* Janssens \***

Denizli, Muğla (Jäch 1992e).  
Unpublished: Bolu.  
Chorotype: ANAW

**112. *H. virginalis* Janssens \***

Trabzon (Janssens 1963b), Mardin, Van (Jäch 1988a).  
Unpublished: Artvin, Erzurum, Gümüşhane, Hakkari, Rize.  
Chorotype: ANAT

**113. *H. wewalkai* Jäch \***

Muğla (Jäch 1988c).  
Chorotype: ANSW

**Limnebius Leach****1. *L. atomus* (Duftschmid)**

Bursa, Kırklareli, Samsun (Jäch 1993).

The record from İzmir by Sahlberg (1913) is very probably due to misidentification.

Chorotype: SIE

**2. *L. attalensis* Jäch \***

Antalya (Jäch 1993).

Chorotype: ANAS

**3. *L. claviger* Jäch \***

Balıkesir (Jäch 1993).

Chorotype: ANNW

**4. *L. corfidius* Orchymont**

Balıkesir (Orchymont 1945b), Bursa, Çanakkale, İstanbul, Muğla (Jäch 1993).

Chorotype: BALAN

**5. *L. corybus* Orchymont**

Aydın, İzmir (orchymont 1945b), Balıkesir, Bitlis, Bursa, Çanakkale, Gümüşhane, Muğla, Ordu (Jäch 1993), Erzurum (Kasapoğlu 2002).

Unpublished: Denizli.

Chorotype: BALAN

**6. *L. distinguendus* Ferro**

Siirt (Jäch 1993).

Unpublished: Şırnak.

Chorotype: IRAN

**7. *L. fallaciosus* Ganglbauer**

Unpublished: Kırklareli, Tekirdağ.

Recorded from Turkey by Jäch (2004).

Chorotype: BALAN

**8. *L. ferroi* Jäch \***

Antalya, Hatay, Mersin (Jäch 1993).

Chorotype: ANAS

**9. *L. levantinus* Jäch**

Bitlis, Diyarbakır, Gaziantep, Hatay, Kilis, Şırnak (Jäch 1993).

Unpublished: Erzincan.

Chorotype: SYAN

**10. *L. murentinus* Orchymont**

Balıkesir, Bursa (Jäch 1993).

Chorotype: BALAN

**11. *L. myrmidon* Rey**

Balıkesir, Bursa, Bitlis, Çanakkale, İstanbul, Muğla, Muş, Ordu (Jäch 1993), Artvin, Erzurum (Kasapoğlu 2002).

Chorotype: SEU

**12. *L. nitigeus* Orchymont**

Tekirdağ (Jäch 1993).

Chorotype: BALAN

**13. *L. paganettii* Ganglbauer**

Çanakkale (Jäch 1993).

Chorotype: BALAN

**14. *L. papposus* Mulsant**

Afyon, Ardahan, Artvin, Bayburt, Bitlis, Çanakkale, Diyarbakır, Edirne, Erzincan, Erzurum, Gümüşhane, Hakkari, Kars, Kastamonu, Konya, Muğla, Sivas, Van (Jäch 1993).

Chorotype: SEU

**15. *L. paranuristanus* Ferro**

Bitlis, Erzincan, Erzurum, Gaziantep (Jäch 1993).

Unpublished: Kilis.

Chorotype: IRAN

**16. *L. perparvulus* Rey**Ankara, Antalya, Balıkesir, Çanakkale, Diyarbakır, Erzurum, Hatay, İzmir, Kocaeli, Mardin, Mersin, Muğla, Tekirdağ (Jäch 1993), Erzincan (Darılmaz *et al.* 2011).

Chorotype: MED

**17. *L. reuvenortali* Jäch**

Antalya (Jäch 1993). This species is very common in Israel. The isolated record from Turkey needs confirmation.

Chorotype: SYAN

**18. *L. rubropiceus* Kuwert**Ardahan, Bolu, Edirne, İstanbul, Kayseri, Rize, Tekirdağ (Jäch 1993), Artvin, Erzurum (Kasapoğlu 2002), Erzincan (Darılmaz *et al.* 2011).

Unpublished: Sinop.

Chorotype: BALAN

**19. *L. spinosus* Jäch \***

Antalya (Jäch 1993).

Chorotype: ANAS

**20. *L. stagnalis* Guillebeau**

Ardahan, Artvin, Balıkesir, Bayburt, Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Edirne, Erzincan, Erzurum, Gümüşhane, İstanbul, Kars, Kırklareli, Ordu, Rize, Sinop, Sivas, Tekirdağ, Van (Jäch 1993).

Chorotype: BALAN

**21. *L. setifer* Khnзорian**

Erzurum (Jäch &amp; Skale 2011).

Chorotype: ARAN

**Ochthebius Leach****1. *O. akbuluti* Jäch & Kasapoğlu \***Erzurum (Jäch *et al.* 2003).

Chorotype: ANAE

**2. *O. anatolicus* Janssens**

Trabzon (Janssens 1963b), Artvin, Gümüşhane, Ordu, Rize (Jäch 1992d).

Unpublished: Giresun.

Chorotype: KOAR

**3. *O. bernhardi* Jäch & Delgado**

Antalya, Aydın, İzmir, Muğla (Jäch &amp; Delgado 2008).

Unpublished: Balıkesir, Bilecik, Çanakkale.

Chorotype: BALAN

**4. *O. brevicollis steinbuehleri* Reitter**Antalya, Muğla (Sallicandro *et al.* 1994).

Chorotype: BALAN

**5. *O. caucasicus* Kuwert**

Ankara, Artvin, Erzurum, Van (Kasapoğlu 2002).

Unpublished: Kars.

Chorotype: TUAN

**6. *O. ciliciae* Jäch \***

Mersin (Jäch 1989b).

Chorotype: ANAS

**7. *O. colchicus* Janssens \***

Trabzon (Janssens 1963b; Jäch 1989b).

Chorotype: ANNE

**8. *O. colveranus* Ferro, unrevised complex**Artvin, Balıkesir, Bitlis, Bursa, Çanakkale, Gümüşhane, İstanbul, İzmir, Kars, Van (Jäch 1992d), Erzincan (Darılmaz *et al.* 2011).

Chorotype: EUR

**9. *O. costatellus* Reitter**Erzurum (Kasapoğlu *et al.* 2006).

Chorotype: SIB

**10. *O. decianus* Orchymont \***İzmir (Orchymont 1942), Antalya (Jäch, 1989b), Kahramanmaraş (Jäch 1999), Erzincan (Darılmaz *et al.* 2011).

Chorotype: ANAT

**11. *O. delyi* Hebauer**Bolu (Jäch 1992d). The specimens from Bolu were assigned to *O. delyi* by Jäch (1992d). However, examination of additional material might reveal, that this population has to be regarded as a discrete species.

Chorotype: IRAN

**12. *O. difficilis* Mulsant**Trabzon (Janssens 1963b), Adıyaman, Antalya, Bitlis, Erzurum, Gümüşhane, İzmir, Kars, Kilis, Konya, Malatya, Manisa, Mersin, Muğla, Muş, Ordu, Şırnak, Tekirdağ, Van (Jäch 1992a), Balıkesir, Çanakkale (Ertorun & Tanatmış 2010), Erzincan (Darılmaz *et al.* 2011).

Chorotype: MED

**13. *O. dilatatus* Stephens**

Edirne, İstanbul, İzmir, Kastamonu, Kırklareli, Samsun (Jäch 1990).

Unpublished: Denizli, Muğla, Ordu.

Chorotype: EUM

**14. *O. elburzi* Ferro**

Bitlis, Bolu, Bursa, Hakkari, Ordu, Van (Jäch 1991), Artvin, Erzurum (Kasapoğlu 2002).

Unpublished: Eskişehir, Giresun.

Chorotype: IRAN

**15. *O. elisae* Sahlberg**

Diyarbakır, Hatay, Mardin, Şırnak (Jäch 1991).

Unpublished: Adıyaman.

Chorotype: SWA

**16. *O. erzerumi* Kuwert**

Ankara, Erzurum, Konya, Sivas, Van (Jäch 1992b).

Chorotype: SIB

**17. *O. evanescens* Sahlberg**

Unpublished: Sivas.

Recorded from Turkey by Jäch (2004).

Chorotype: SIE

**18. *O. fausti* Sharp**

Ankara, Gaziantep, İzmir, Sivas (Jäch, 1991), Erzurum (Kasapoğlu 2002), Balıkesir (partim), Bursa (Ertorun &amp; Tanatmış 2010).

Unpublished: Muğla.

Specimens listed under this species from Çanakkale by Ertorun & Tanatmış (2010) are in fact *O. pusillus*.

Chorotype: TUE

**19. *O. foveolatus* Germar**

Ankara, Balıkesir, Erzurum, İzmir, Kocaeli, Ordu, Sivas (Jäch 1991), Bilecik, Bursa, Çanakkale (Ertorun &amp; Tanatmış 2010).

Unpublished: Bitlis, Muğla.

Chorotype: SEU

**20. *O. gibbosus* Germar**

Artvin (Jäch 1992d).

Chorotype: SEU

**21. *O. haeli* Ferro**

Afyon, Konya (Jäch 1990).  
 Unpublished: Burdur.  
 Chorotype: BALAN

**22. *O. hanshebaueri* Jäch \***

Kahramanmaraş (Jäch 1994a).  
 Chorotype: ANAS

**23. *O. hatayensis* Jäch \***

Hatay (Jäch 1989b).  
 Chorotype: ANAS

**24. *O. hellenicus* Ieniştea**

İzmir (Ieniştea 1988).  
 Unpublished: Antalya.  
 Chorotype: BALAN

**25. *O. hofratvukovitsi* Jäch \***

Artvin, Erzurum (Jäch 1994a).  
 Chorotype: ANNE

**26. *O. huberti* Jäch \***

Muğla (Jäch 1989b).  
 Unpublished: Artvin, Bayburt, Konya.  
 Chorotype: ANAT

**27. *O. inconspicuus* Jäch \***

Kars, Mersin, Ordu, Sinop (Jäch 1991), Erzurum (Kasapoğlu 2002), Erzincan (Darılmaz *et al.*, 2011).  
 Specimens listed under this species from Balıkesir and Çanakkale by Ertorun & Tanatmış (2010) are in fact *O. magnannulatus*.  
 Chorotype: ANAT

**28. *O. inelegans* Jäch**

Iğdır (Jäch 2002).  
 Chorotype: IRAN

**29. *O. kirschenhoferi* Jäch \***

Bitlis, Muş, Van (Jäch 1994a).  
 Chorotype: ANAE

**30. *O. kurdistanicus* Jäch**

Hakkari (Jäch 1989b).  
 Chorotype: IRAN

**31. *O. lacustatta* Jäch**

Ankara (Jäch, 1991).  
 Chorotype: TUAN

**32. *O. lanuginosus* Reiche & Saulcy**

Ankara, İzmir, Mersin (Jäch 1989a).  
 Unpublished: Antalya, Aydın, Denizli, Muğla.  
 Chorotype: BALAN

**33. *O. lividipennis* Peyron**

Adana, Antalya, Diyarbakır, Gaziantep, Hatay, Iğdır, İzmir, Kilis, Kırklareli, Mersin, Niğde, Sivas, Şanlıurfa (Jäch 1992b), Erzurum (Kasapoğlu 2002), Balıkesir, Bursa, Çanakkale (Ertorun & Tanatmış 2010).  
 Unpublished: Aydın, Konya, Muğla.  
 Chorotype: EME

**34. *O. madli* Jäch \***

Ankara, Çorum (Jäch 1992c).  
 Chorotype: ANAC

**35. *O. magnannulatus* Delgado & Jäch**

Ankara, Balıkesir, Çanakkale, Erzurum, İzmir, Kocaeli, Muğla, Sinop, Sivas (Delgado & Jäch 2009), Bursa (Ertorun & Tanatmış 2010: under the name *O. mediterraneus*).  
 Chorotype: BALAN

**36. *O. maxfischeri* Jäch \***

Balıkesir, Muğla (Jäch 1994a).  
 Chorotype: ANAW

**37. *O. metallescens* Rosenhauer**

Kırklareli, “Taurus” (Jäch 1989b), Bursa, Erzincan, Kahramanmaraş (Jäch 1999).  
 Specimens listed under this species from Bilecik and Bursa by Ertorun & Tanatmış (2010) are in fact *O. colveranus* and *O. smyrnensis* respectively.  
 Chorotype: SEU

**38. *O. metallicus* Orchymont \***

Antalya (Jäch 1994a).  
 Chorotype: ANAS

**39. *O. metarius* Orchymont**

Denizli (Orchymont 1942), Mersin (Ferro 1984b), Çanakkale, Muğla (Jäch 1989b). Chorotype: BALAN

**40. *O. meridionalis* Rey**

Burdur, Çorum, Kars, Konya, Samsun, Van (Jäch 1992b), Erzurum (Kasapoğlu 2002), Balıkesir (Ertorun & Tanatmış 2010).  
 Unpublished: Aydın, Denizli, İstanbul, Muğla.  
 The record from Bursa by Ertorun & Tanatmış (2010) could not be verified because the aedeagus is totally damaged.  
 Chorotype: TEM

**41. *O. metellus* Orchymont \***

Antalya (Orchymont 1942; Jäch 1989b).  
 Chorotype: ANAS



**42. *O. minimus* (Fabricius)**

Samsun (Jäch 1990), Balıkesir, Bilecik, Bursa (Ertorun & Tanatmış 2010).  
Unpublished: Artvin, Konya.  
Chorotype: EUR

**43. *O. monychus* Orchymont**

Aydın, Denizli, İzmir (Orchymont 1941), Unpublished: Manisa, Muğla.  
Chorotype: BALAN

**44. *O. nonaginta* Jäch**

Unpublished: Erzurum.  
Recorded from Turkey by Jäch (2004).  
Chorotype: TUAN

**45. *O. oezkani* Jäch & Kasapoğlu \***

Erzurum (Jäch *et al.* 2003).  
Chorotype: ANAE

**46. *O. parvannulatus* Delgado & Jäch**

Antalya, Erzincan, Mersin, Trabzon (Delgado & Jäch 2009).  
Chorotype: BALAN

**47. *O. peisonis* Ganglbauer**

Burdur, Van (Jäch 1992b).  
Chorotype: SIE

**48. *O. pliginskiyi* Jäch**

Artvin (Kasapoğlu *et al.* 2006).  
Chorotype: ANCA

**49. *O. punctatoides* Jäch**

Hatay (Jäch 1994a).  
Chorotype: IRAN

**50. *O. pusillus* Stephens**

Balıkesir, İstanbul, Kastamonu, Kırklareli, Samsun (Jäch 1992b).  
Unpublished: Çanakkale, Tekirdağ.  
Chorotype: SEU

**51. *O. quadrifoveolatus* Wollaston**

Kilis (Jäch 1989a).  
Unpublished: Adana, Mersin.  
Chorotype: MES

**52. *O. ragusae* Kuwert**

Antalya, Artvin, Bitlis, Bursa, Diyarbakır, Erzurum, İzmir, Mersin, Muğla, Niğde, Van (Jäch 1989a).  
Chorotype: TUE

**53. *O. rectilobus* Jäch \***

Hatay (Jäch 1989b).  
Chorotype: ANAS

**54. *O. remotus* Reitter**

Erzurum (Kasapoğlu & Erman 2002).  
Unpublished: Bayburt (leg. Ertorun).  
Chorotype: POCA

**55. *O. rivibelli* Jäch \***

Van (Jäch 1990).  
Chorotype: ANAE

**56. *O. schneideri* Kuwert**

Ankara, Iğdır (Jäch 1992a).  
Chorotype: TUAN

**57. *O. schuberti* Jäch \***

Bitlis (Jäch 1999).  
Chorotype: ANAE

**58. *O. scitulus* Ferro**

Bitlis, Hakkari, Hatay (Jäch 1989b), Erzincan (Darılmaz *et al.* 2011).  
Chorotype: IRAN

**59. *O. serpentinus* Jäch \***

Bitlis, Hakkari, Van (Jäch 1989b).  
Unpublished: Antalya, Gaziantep, Kahramanmaraş, Konya.  
Chorotype: ANAT

**60. *O. smyrnensis* Sahlberg \***

Antalya, Balıkesir, Çanakkale, İzmir (Jäch 1989b).  
Unpublished: Bursa, Denizli.  
Chorotype: ANAT

**61. *O. speculator* Jäch \***

Bitlis (Jäch 1991), Artvin, Erzurum (Kasapoğlu 2002).  
Chorotype: ANAE

**62. *O. striatus* (Castelnau)**

Artvin, Balıkesir, Bitlis, Çanakkale, Diyarbakır, Gaziantep, Hakkari, Hatay, İstanbul, İzmir, Kastamonu, Kilis, Mersin, Sinop, Şırnak, Tekirdağ (Jäch 1990), Bursa (Ertorun & Tanatmış 2010).  
Unpublished: Adana, Antalya, Denizli, Muğla, Şanlıurfa.  
Chorotype: EME

**63. *O. stygialis* Orchymont \***

Antalya (Orchymont 1941), Erzincan, Mersin (Jäch 1990).  
Unpublished: Muğla.  
Chorotype: ANAT

**64. *O. subinteger* Mulsant & Rey**

İstanbul (Jäch 1989c).  
Chorotype: MED

**65. *O. subopacus* Reitter**

Artvin (Jäch 1990).  
Unpublished: Rize, Sinop, Trabzon.  
Chorotype: KOAR

**66. *O. subpictus deletus* Rey**

Unpublished: İzmir, Muğla.  
Recorded from Turkey by Jäch (2004).  
Chorotype: SEU

**67. *O. sulphuris* Jäch**

Hakkari (Jäch 1989a), Erzurum (Kasapoğlu 2002).  
Unpublished: Kars.  
Chorotype: ARAN

**68. *O. thraciae* Jäch**

Bursa, Kastamonu, Kırklareli (Jäch 1990).  
Chorotype: BALAN

**69. *O. trapezuntinus* Jäch \***

Trabzon (Jäch 1999).  
Chorotype: ANNE

**70. *O. turcicus* Jäch \***

Gümüşhane, Muğla (Jäch 1989a).  
Unpublished: Kütahya.  
Chorotype: ANAT

**71. *O. uskubensis* Hebauer**

Sivas (Jäch 1991), Erzurum (Kasapoğlu 2002), Balıkesir,  
Bursa (Ertorun & Tanatmış 2010).  
Chorotype: BALAN

**72. *O. ustaoglu* Topkara, Jäch & Kasapoğlu \***

Denizli, Erzurum (Topkara *et al.* 2011).  
Chorotype: ANAT

**73. *O. virens* Jäch \***

Hakkari (Jäch 1992b).  
Unpublished: Kars.  
Chorotype: ANAE

**74. *O. viridis* Peyron**

Adana, Antalya, Bursa, Diyarbakır, Edirne, Mersin, Muğla,  
Samsun, Sivas, Van (Jäch & Delgado 2008).  
Records from Çanakkale and İzmir by Balfour-Browne  
(1939) may either refer to this species or to *O. bernhardi*.  
Chorotype: EUM

**Zoogeographical analysis**

On the basis of their known distribution, the 210 taxa listed above can be attributed to 28 chorotypes, grouped in six zoogeographical complexes (Table 1–2).

Best represented is the complex of endemics of the Middle East (ME), with 117 species/subspecies (55.71 %). This reflects the local character of the Turkish hydraenid fauna. Within the ME-complex, the Turkish species are dominant (103 spp.), followed by S-Anatolian endemics (28 spp.), Anatolian endemics (20 spp.) and E-Anatolian endemics (16 spp.).

The WP-complex includes 43 species (20.47 %). Balkano-Anatolian species are dominant (37 spp.), followed by the Turano-Anatolian ones. The Hydraenidae fauna of Turkey is closely related to the Balkan fauna. Excluding endemics, 34 % of the species belong to the Balkano-Anatolian chorotype.

The SWA-complex includes 20 species (9.53 %). Eleven of these species are related to the Iranian fauna, while four species are found only in Turkey and the Caucasus.

Thirty species are widely distributed in the Palearctic Region (P-complex).

The remaining complexes (E, M, P) are of minor significance.

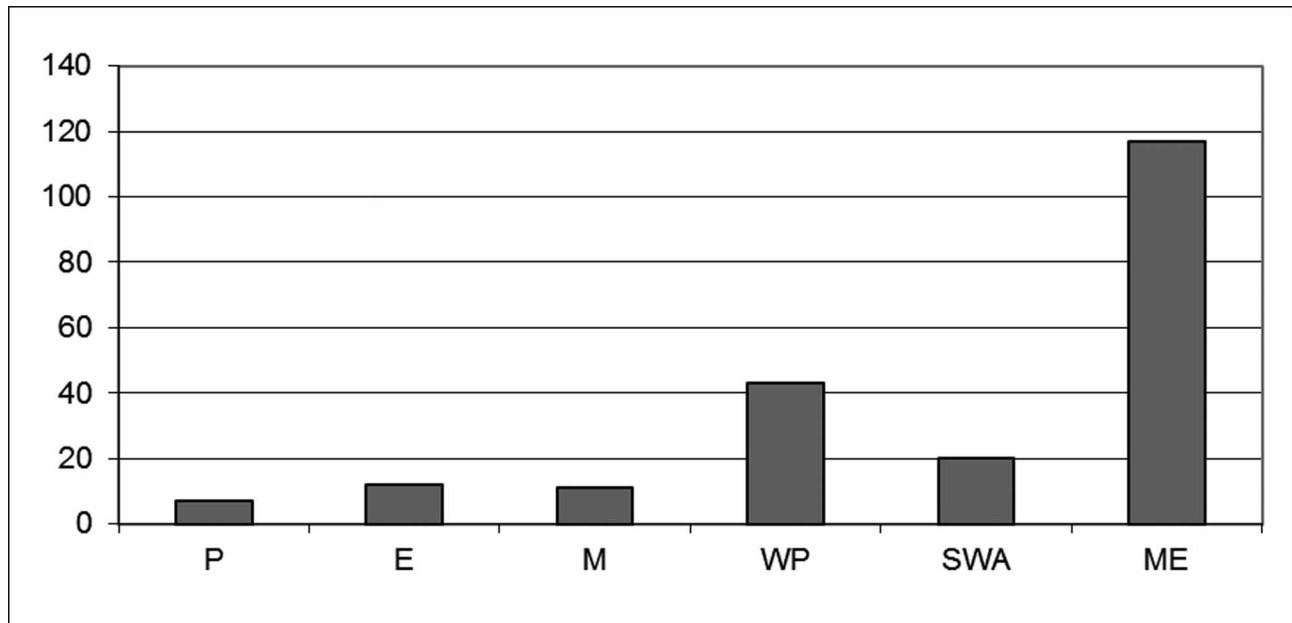
The largest number of Hydraenidae is encountered in the Eastern Anatolian Region (78 spp.), followed by the Black Sea Region (75 spp.), the Marmara Region (71 spp.), the Mediterranean Region (71 spp.), the Aegean Region (56 spp.), the Central Anatolian Region (40 spp.), and the South-eastern Anatolian Region (31 spp.) – see Table 3. This richness, however, depends not only on the size of the regions, but largely reflects the availability of suitable habitats and the degree of exploration.

It can be suggested that Anatolia is a biodiversity ‘hotspot’ for Hydraenidae. This has also been confirmed for Tettigoniinae (Orthoptera) (Çıplak 2003) and Trichoptera. Sipahiler (2008) stated that 35 % of the species of Trichoptera known from Turkey are endemic, which is the highest rate of endemism within all Mediterranean countries.

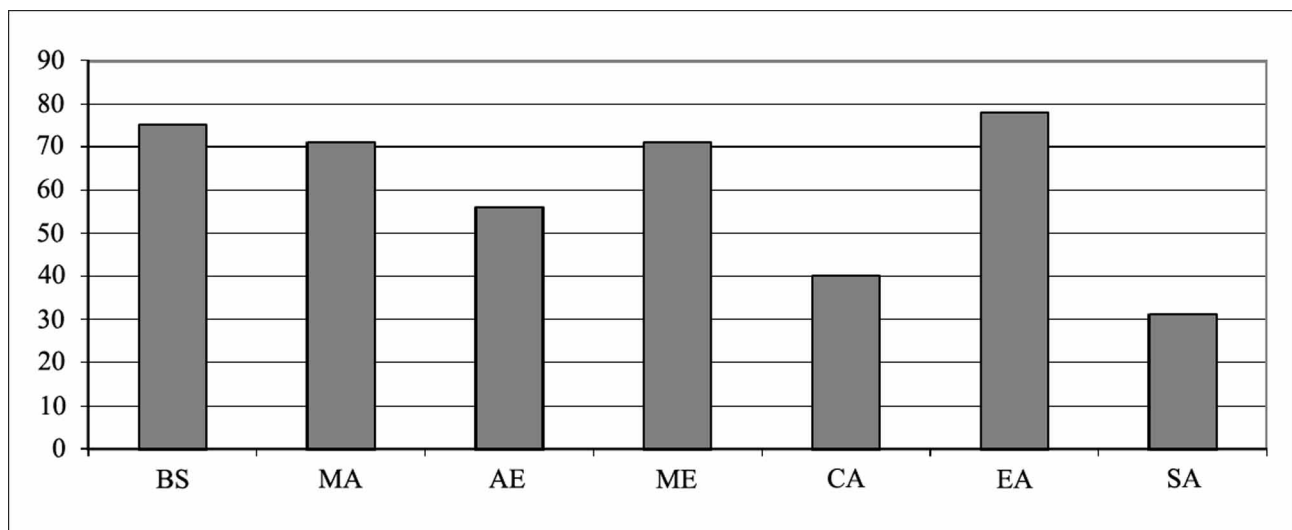
Within water beetles, Hydraenidae by far have the highest degree of endemism in Turkey. Adepagous water beetles are represented in Turkey by 167 species and subspecies of which 17 (10.2 %) are endemic (Darılmaz & Kıyak 2009). Hydrophiloidea are represented in Turkey by 161 species and subspecies of which only six species (3.7 %) are endemic (Darılmaz & İncekara 2011). The exceptional diversity of hydraenids can very probably be partly credited to their small size and their limited dispersal abilities (Jäch & Balke 2008). According to Perkins

(1997) the evolution of an antimicrobial defense system, the exocrine secretion delivery system (ESDS), has greatly influenced the diversity of those genera in which the system is present.

**TABLE 2.** The main zoogeographic complexes in Turkey, showing the number of species/subspecies of Hydraenidae. Palearctic (P); European (E); Mediterranean (M); Western Palearctic (WP); South-west Asian (SWA); Middle East (ME).



**TABLE 3.** Zoogeographical main regions of Turkey, showing number of hydraenid species represented in each. Black Sea Region (BS); Marmara Region (MA); Aegean Region (AE); Mediterranean Region (ME); Central Anatolian Region (CA); Eastern Anatolian Region (EA); South-eastern Anatolian Region (SA).



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